

### 7.1.3

## Chemical Waste Management Policy



**IKG Punjab Technical University, Kapurthala**  
**Department of Chemical Sciences (Main Campus)**

Ref.No:-IKGPTU/CS/ 1902

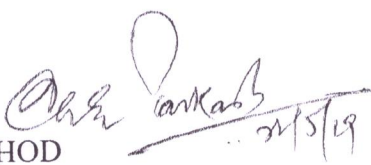
Date:-22/05/2019


This is reference to the adoption of safety protocol for the uses of chemicals at Department of Chemical Sciences, CB-III, IKGPTU (Main Campus). In this reference the following committee is hereby constituted with the following members:-

1. Dr. Gaurav Bhargava (HOD)
2. Dr. Chander Parkash (A.P)
3. Dr. Vandana Naithani (A.P)
4. Dr. Rupesh Kumar (A.P)
5. Dr. Roopa (A.P)
6. Dr. Reshu Sanan (A.P)

Terms and Scope of the committee:-

- The committee will sit at least twice a year.
- Will review all the safety matter related to usage of Chemicals.
- Will deal with any other such matter as it deems fit for discussion and as is directed by the Board of studies of the said subject/Internal Quality Assurance Cell/ Academic Council or standing Committee off the Academic Council/ Governing Body / Departmental committee of the said subject.

  
HOD  
for (Chemical Sciences)

  
Head  
Department of Chemical Sciences  
IKG Punjab Technical University  
Kapurthala - 144603 Punjab (INDIA)

**IKG Punjab Technical University, Kapurthala**  
**Department of Chemical Sciences (Main Campus)**

Ref.No:-IKGPTU/CS/1908

Date:-31/05/2019

This is to notify that the 1<sup>st</sup> Meeting of the adoption of safety protocol for the uses of chemicals at Department of Chemical Sciences, CB-III, (Main Campus) IKGPTU will be held on 22/07/2019 to discuss the agenda as mentioned below.


Following members are requested to attend.

1. Dr. Gaurav Bhargava (HOD)
2. Dr. Chander Parkash (A.P)
3. Dr. Vandana Naithani (A.P)
4. Dr. Rupesh Kumar (A.P)
5. Dr. Roopa (A.P)
6. Dr. Reshu Sanan (A.P)

Agenda:-

1. Reviewing the curriculum and discussion any matter which may have any chemical ethics issues.
2. Usage of hazardous Chemical.
3. Safety issues of all stakeholders.
4. Any other matter.

*Vandana*  
*22/05/2019*  
HOD  
(Chemical Sciences)

  
Head  
Department of Chemical Sciences  
IKG Punjab Technical University  
Kapurthala - 144603 Punjab (INDIA)

**IKG Punjab Technical University, Kapurthala**  
**Department of Chemical Sciences (Main Campus)**

Ref. No. IKGPTU/CS/3020

Date-21/06/2021


The meeting to review the implementation of policy for chemical waste was held on 21/06/2021 in the office of HOD, Department of Chemical Sciences, IKGPTU


The following faculty members were present in the meeting

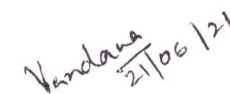
- (i) Dr. Gaurav Bhargava, Head
- (ii) Dr. Chander Prakash, AP
- (iii) Dr. Vandana Naithani, AP
- (iv) Dr. Rupesh Kumar, AP
- (v) Dr. Reshu Sanan, AP

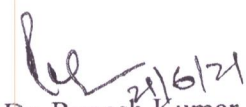
The following points have been reviewed:

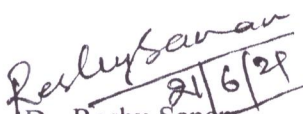
1. Fire extinguishers have been installed in all laboratories.
2. First-aid kit are available in all labs.
3. Arrangement for segregation of wastes in different containers is done.
4. Recycling and reuse of solvents wherever possible is being done.
5. Marking of Area for land-fill will be decided and finalized in consultation with university authorities.

  
Dr. Gaurav Bhargava  
(Associate Professor & Head)

  
Dr. Chander Prakash  
(Assistant Professor)

  
Dr. Vandana Naithani  
(Assistant Professor)

  
Dr. Rupesh Kumar  
(Assistant Professor)

  
Dr. Reshu Sanan  
(Assistant Professor)



Head  
Department of Chemical Sciences  
IKG Punjab Technical University  
Kapurthala - 144603 Punjab (INDIA)

**IKG Punjab Technical University, Kapurthala**  
**Department of Chemical Sciences (Main Campus)**

Ref. No. IKGPTU/CS/1981-A

Date-22/07/2019

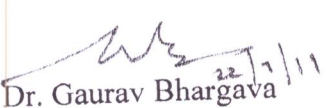
The first meeting of safety protocol for the uses of chemicals was held on 22/07/2019 at 11:00 am in the office of HOD, Department of Chemical Sciences, IKGPTU

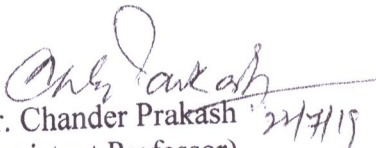
The following faculty members were present in the meeting

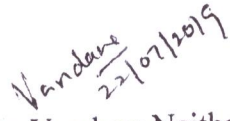
- (i) Dr. Gaurav Bhargava, Head
- (ii) Dr. Chander Prakash, AP
- (iii) Dr. Vandana Naithani, AP
- (iv) Dr. Rupesh Kumar, AP
- (v) Dr. Roopa, AP

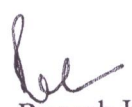
The following points have been discussed and resolved:

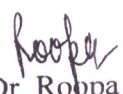
1. The policy for the chemical waste management was thoroughly discussed and approved and to be adopted in department of chemical sciences. The policy document is attached as Annexure A.
2. In accordance with the policy adopted, the required measures will be implemented/monitored by the respective lab in charges.


  
Dr. Gaurav Bhargava  
(Professor & Head)

  
Dr. Chander Prakash  
(Assistant Professor)

  
Dr. Vandana Naithani  
(Assistant Professor)

  
Dr. Rupesh Kumar  
(Assistant Professor)

  
Dr. Roopa  
(Assistant Professor)

  
Head  
Department of Chemical Sciences  
IKG Punjab Technical University  
Kapurthala - 144603 Punjab (INDIA)

## Policy for the chemical waste management at the Department of Chemical Sciences, IKG Punjab Technical University, Kapurthala

### Introduction


Waste materials are substances which are no longer of use and thus needs to be discarded after primary use. They may be in the form of solids, liquids or gases in a container. Waste materials may also include hazardous residues. Chemical waste consists of chemical substances, including laboratory chemicals, film developer, disinfectants (expired or no longer in use), solvents, cleaning agents and others types. Some of these waste requires particular attention and disposal and thus Waste legislation divides waste into non-hazardous and hazardous categories.

As department of chemical sciences is offering graduate, postgraduate and research programmes in chemistry, use of chemicals and disposal needs to be proper with regards to health and environment safety. The goal of this Chemical Waste Management Plan is to protect the health and safety of employees, students, and the environment while complying with applicable Hazardous waste management rules 2016, Government of India. Hence the following policy is being recommended for the chemical waste management at departmental level.

#### 1. General rules for laboratories

- (a) These rules will be applicable to all undergraduate/postgraduate/research laboratories of the chemical sciences department and must be familiar to all the users of laboratory.
- (b) All laboratories must be equipped with fire extinguishers and first-aid boxes.
- (c) The laboratory rooms are only to be used during working hours. Outside working hours, usage is permitted only with the approval of the laboratory supervisor. No visitors are to be allowed into the laboratory rooms since no liability exists for persons not employed by the institute.
- (d) Safety glasses and laboratory coats must always be worn in the laboratory.
- (e) Appropriate gloves (rubber gloves, fire resistant gloves) must be worn when handling corrosive or very hot (oven) materials.
- (f) All containers in which chemicals are stored must be clearly and durably labelled (labels attached as Annexure A).



  
Vandana



Head  
Department of Chemical Sciences  
IKG Punjab Technical University  
Kapurthala - 144603 Punjab (INDIA)

- (g) Large amounts of flammable materials are only to be stored in the chemical store specified for this purpose. Storage of these materials in corridors, stairways or hallways is forbidden.
- (h) Large amounts of flammable materials are only to be stored in the chemical store specified for this purpose. Storage of these materials in corridors, stairways or hallways is forbidden.
- (i) Each user is responsible for cleanliness, orderliness and his/her own safety. After the completion of work, the work area and apparatus should be clean and the chemicals used must be returned to the chemical cabinet.
- (j) Prior to the use of equipment, it is absolutely necessary that the appropriate operating instructions are understood, or introductory guidance obtained. Damaged or defective equipment should be immediately reported.
- (k) Before leaving the laboratory room, the windows should be closed, gas and water taps should be shut off, electronic equipment excepting permanently active (e.g. drying cabinets, refrigerators and freezers) must be turned off, the lights switched off and the laboratory locked.

## 2. Chemicals recommended for use in laboratory

- (a) Preference will be given to chemicals which are not hazardous to the health/environment (biodegradable chemicals)
- (b) All substances which potentially pose a chemical, health and/or environmental risk must be properly classified and labelled.

## 3. Classification and labelling of chemicals

- (a) The classification of chemical hazards according to GHS rules (Globally Harmonized system of classification and labelling of chemicals), 1992, United Nations

-Physical hazards  
-Health hazards  
-Environmental hazards  
-Hazard communication

- (b) According to GHS, the product label must contain certain prescribed information which describes the hazards associated with the product. The chemical identity,

*lee*

*Qaz*

*hoops*

*Vandana*

*az*

Head  
Department of Chemical Sciences  
IKG Punjab Technical University  
Kapurthala - 144603 Punjab (INDIA)

standardized hazard statements, signal words and symbols should appear on the label according to the classification of that chemical or mixture.

### HCS Pictograms and Hazards










<p><b>Health Hazard</b></p>  <ul style="list-style-type: none"> <li>• Carcinogen</li> <li>• Mutagenicity</li> <li>• Reproductive Toxicity</li> <li>• Respiratory Sensitizer</li> <li>• Target Organ Toxicity</li> <li>• Aspiration Toxicity</li> </ul>	<p><b>Flame</b></p>  <ul style="list-style-type: none"> <li>• Flammables</li> <li>• Pyrophorics</li> <li>• Self-Heating</li> <li>• Emits Flammable Gas</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>	<p><b>Exclamation Mark</b></p>  <ul style="list-style-type: none"> <li>• Irritant (skin and eye)</li> <li>• Skin Sensitizer</li> <li>• Acute Toxicity (harmful)</li> <li>• Narcotic Effects</li> <li>• Respiratory Tract Irritant</li> <li>• Hazardous to Ozone Layer (Non-Mandatory)</li> </ul>
<p><b>Gas Cylinder</b></p>  <ul style="list-style-type: none"> <li>• Gases Under Pressure</li> </ul>	<p><b>Corrosion</b></p>  <ul style="list-style-type: none"> <li>• Skin Corrosion/Burns</li> <li>• Eye Damage</li> <li>• Corrosive to Metals</li> </ul>	<p><b>Exploding Bomb</b></p>  <ul style="list-style-type: none"> <li>• Explosives</li> <li>• Self-Reactives</li> <li>• Organic Peroxides</li> </ul>
<p><b>Flame Over Circle</b></p>  <ul style="list-style-type: none"> <li>• Oxidizers</li> </ul>	<p><b>Environment (Non-Mandatory)</b></p>  <ul style="list-style-type: none"> <li>• Aquatic Toxicity</li> </ul>	<p><b>Skull and Crossbones</b></p>  <ul style="list-style-type: none"> <li>• Acute Toxicity (fatal or toxic)</li> </ul>

Figure 1: Labelling of Chemicals Pictogram

#### 4. Disposal of chemical residues in laboratories

- Acidic and highly toxic bases may in some cases be neutralized, diluted and (safely) discarded.
- Containers of suitable types and sizes must be obtained for collection of each class of waste prior to disposal.
- Chemical waste should only be stored temporarily and disposed of with as little delay as possible.
- Liquid containing heavy metals can be precipitated as their insoluble chlorides, sulfides and carbonates by treatment with hydrochloric acid, hydrogen or ammonium sulfide and ammonium carbonate, respectively. These precipitates can then be disposed of in appropriate containers.

*See*

*Only*

*in*

*box*

*Vandana*  
 Head  
 Department of Chemical Sciences  
 IKG Punjab Technical University  
 Kapurthala - 144603 Punjab (INDIA)



(e) Mercury should be avoided or substituted if there is no company available which offers recycling. It must be stored in a separate container. Mercury from broken thermometers can be detoxified as mercury amalgam.

(f) Chlorinated and non-chlorinated will be disposed-off in separate containers.

#### 5. Disposal of solid waste in a monitored landfill

The disposal of chemical solid waste is carried out in properly designed and operated landfills. Controlled quantities of specific hazardous wastes may be broken down into non-hazardous substances, immobilized or adequately diluted by the physical, chemical and biochemical processes which naturally occur in landfills.

The location of a landfill for hazardous waste depends on technical criteria and should be decided upon only after assessment of its potential environmental impact.

*See*

*an*

*not*

*Vandana*

  
Head  
Department of Chemical Sciences  
IKG Punjab Technical University  
Kapurthala - 144603 Punjab (INDIA)